



To : _____

Specification of FUJITSU TFT-LCD module

FLC51UXC8V- H

Approval
Date : By :

This Product is designed, developed and manufactured as contemplated for general use, including without limitation, general office use, personal use, household use, and ordinary industrial use, but is not designed, developed and manufactured as contemplated for use accompanying fatal risks or dangers that, unless extremely high safety is secured, could lead directly to death, personal injury, severe physical damage or other loss (hereinafter "High Safety Required Use"), including without limitation, nuclear reaction control in nuclear facility, aircraft flight control, air traffic control, mass transport control, medical life support system, missile launch control in weapon system. If customer's product possibly falls under the category of High Safety Required Use, please consult with our sales representatives in charge before such use. In addition, Fujitsu shall not be liable against the Customer and/or any third party for any claims or damages arising in connection with the High Safety Required Use of the Product without permission.

Specification No. : Tech Bes LCD-00249

Issue Date : January 7, 2004

Issued by : _____

K. Tanaka

Director

Design Dep.

Technology Div.

FUJITSU DISPLAY TECHNOLOGIES CORPORATION



TABLE OF CONTENTS

1. APPLICATIONS	3
2. PRODUCT NAME AND MODEL NUMBER	3
2-1.Product Names	3
2-2.Model Numbers	3
3. OVERVIEW	3
4. CONFIGURATION	3
5. MECHANICAL SPECIFICATIONS	4
6. ABSOLUTE MAXIMUM RATING	5
7. RECOMMENDED OPERATING CONDITIONS	5
8. ELECTRICAL SPECIFICATIONS	6
9. OPTICAL SPECIFICATIONS	8
10. INTERFACE SPECIFICATIONS	12
10-1.Signal Descriptions	12
10-2.LVDS Data Assignment	13
10-3. Color Data Assignment	14
10-4. Input Signal Timing	15
10-5. Correspondence between Data and Display Position	17
10-6.Power Supply Sequence	17
11. BACK-LIGHT SPECIFICATIONS	18
11-1.Pin configurations for Back-light	18
11-2.CCFL	18
11-3.Life	18
12. APPEARANCE SPECIFICATIONS	19
12-1.Appearance	19
12-2.Dot defects	20
13. ENVIRONMENTAL SPECIFICATIONS	21
14. INDICATIONS	22
15. PACKAGING	22
15-1.Packing Specifications	22
15-2.Packing Method	23
16. WARRANTY	27
17. PRECAUTIONS	27
18. OTHERS	33

DOCUMENT CONTROL SECTION

DATE

						TITLE	FLC51UXC8V- H
						DRAW. NO.	Tech Bes LCD-00249
						CUST.	
EDIT	DATE	DESIG.	CHECK	APPR.	DESCRIPTION	FUJITSU DISPLAY TECHNOLOGIES CORPORATION	2/
DESIG.			CHECK		APPR.		

1. APPLICATION

This specification is applied to the 20.1-inch UXGA supported TFT-LCD module.

2. PRODUCT NAME AND MODEL NUMBER

2-1 Product Name: LCD Module

2-2 Model Name: FLC51UXC8V- H

3. OVERVIEW

This LCD module has a TFT active matrix type liquid crystal panel 1600x1200 pixels, and diagonal size of 51cm(20.1-inch). This LCD has a LVDS dual interface and can display 16,777,216 colors.

The power supply of this LCD module is +12V DC single.

This module has the characteristics for applying TCO'99.

This module has equivalent to 100% EBU color filter.

4. CONFIGURATION

This LCD module consists of a color TFT-LCD panel that is mounted with TFT driver ICs, a cold-cathode fluorescent tube back-light.

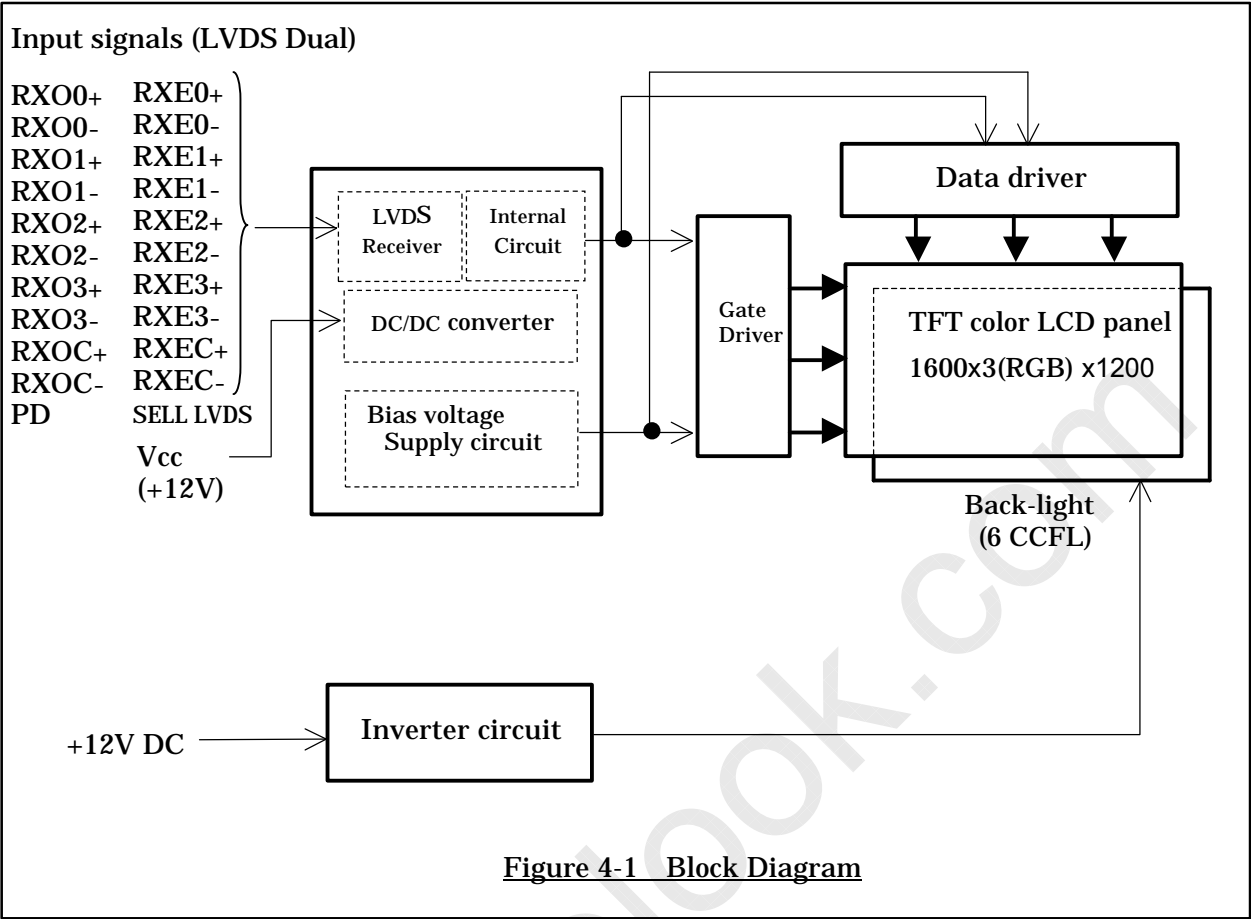
The inverter for the backlight is included.

Figure 4-1 shows a block diagram of this LCD module.

DATE

DOCUMENT CONTROL SECTION

						TITLE		FLC51UXC8V- H	
						DRAW. NO.		Tech Bes LCD-00249	
								CUST.	
EDIT	DATE	DESIG.	CHECK	APPR.	DESCRIPTION		FUJITSU DISPLAY TECHNOLOGIES CORPORATION		3/
DESIG.				CHECK			APPR.		



5. MECHANICAL SPECIFICATIONS

Table 5-1 shows the mechanical specifications of this LCD module.

Table 5-1 Mechanical Specifications

Item	Specifications	Unit	Remark
Dimensions	456x356x30.9(TYP.)	mm	Edge type back-light is used. (ϕ 2.6 CCFLx6) Include inverter. For details on dimensions, See dimensional outline drawing. (At page 34,35,36: Figure 19-1,2,3) Excluding inverter.
Display Resolution	(1600x3) x1200	—	
Display Dot Area	408.0x306.0	mm	
Dot Pitch	(0.085x3)x0.255	mm	
Aspect Ratio	1:1	—	
Weight	3,700 (Typ)	g	
FG-SG	Short circuit	—	

DOCUMENT CONTROL SECTION
DATE

						TITLE	FLC51UXC8V- H	
						DRAW. NO.	Tech Bes LCD-00249	CUST.
EDIT	DATE	DESIG.	CHECK	APPR.	DESCRIPTION	FUJITSU DISPLAY TECHNOLOGIES CORPORATION	4/	
DESIG.			CHECK		APPR.			

6. ABSOLUTE MAXIMUM RATING

Table 6-1 shows the absolute maximum rating of this LCD module.

Table 6-1 Absolute Maximum Rating

Item	Symbol	Condition	MIN.	TYP.	MAX.	Unit
Supply Voltage	V _{CC}	Ta=25°C	−0.3	—	14.0	V
	V _{INV}	Ta=25°C	−0.3	—	14.0	V
Input Signal Voltage (LVDS signal, PD, SELL LVDS)	V _{IN}	Ta=25°C	−0.3	—	3.6	V
Control Voltage	V _{CNT}	Ta=25°C	−0.3	—	V _{INV}	V
Brightness Control Voltage	V _{VR4}	Ta=25°C	0	—	4.0	V

7. RECOMMENDED OPERATING CONDITIONS

Table 7-1 shows the recommended operating conditions of this LCD module.

Table 7-1 Recommended Operating Conditions

Item		Symbol	MIN.	TYP.	MAX.	Unit
Supply Voltage (Logic)		V _{CC}	11.5	12.0	12.5	V
Supply Voltage (Inverter)		V _{INV}	10.8	12.0	13.2	V
Ripple Voltage	V _{CC}	V _{RP}	—	—	0.1	V

DOCUMENT CONTROL SECTION

DATE

						TITLE FLC51UXC8V- H	
						DRAW. NO.	CUST.
						Tech Bes LCD-00249	
EDIT	DATE	DESIG.	CHECK	APPR.	DESCRIPTION	FUJITSU DISPLAY TECHNOLOGIES CORPORATION	5/
	DESIG.		CHECK		APPR.		

8. ELECTRICAL SPECIFICATIONS

Table 8-1 shows the electrical specifications of this LCD module. Figure 8-1 shows the measurement circuit. Figure 8-2(A) shows the equivalent circuit of the logic signal input area. Figure 8-2(B) shows the equivalent circuit of the supply voltage Input area.

Table 8-1 Electrical Specifications

Item		Symbol	Condition	MIN.	TYP.	MAX.	Unit	Remark
Differential-input Voltage (High)		V _{IH}	V _{CM} =+1.2V	—	—	100	mV	
Differential-input Voltage (Low)		V _{IL}		-100	—	—	MV	
Supply Current		I _{CC}	V _{CC} =+12.0±0.5V V _{SS} =0V DCLK=81MHz 60Hz	—	600	1200	mA	*1
Supply Rush Current		I _{SCC}		—	—	5.8	A	*2
Supply Rush Current Duration (1A excess)		T _{SCC}		—	—	0.2.	ms	
B A C K L I G H (*3)	Supply Current	I _{INV}	V _{INV} =12.0V V _{VR4} =0V	—	2.6	3.0	A	*3
	Brightness Control Voltage	V _{VR4}		0	—	3.5	V	
	Lighting Frequency	f	V _{INV} =12.0V, V _{VR4} =0V	—	38.1	—	KHz	
	Lighting Fix Voltage	V _{cnt}		0	—	0.8	V	
	Non-Lighting Fix Voltage	V _{cnt}		2.1	—	V _{INV}		

- (*1) Typical current situation : Color bar pattern. V_{CC}=12.0V
Maximum current situation: 2pixel checker pattern. V_{CC}=11.5V
Without rush current.

(*2) These items prescribe the rush current for starting internal DC/DC.
Charging current to capacitors of V_{CC} is not prescribed.

(*3) External power supply for inverter shall have the current capacity more than 12.6A of the supply current (I_{INV}), otherwise the protective circuit of inverter (fuse) might not work.

DOCUMENT CONTROL SECTION

DATE

						TITLE FLC51UXC8V- H	
						DRAW. NO. Tech Bes LCD-00249	CUST.
EDIT	DATE	DESIG.	CHECK	APPR.	DESCRIPTION	FUJITSU DISPLAY TECHNOLOGIES CORPORATION	6/
	DESIG.		CHECK		APPR.		

A

F

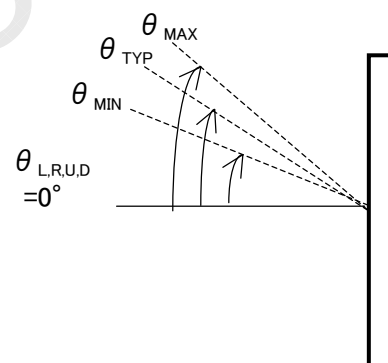
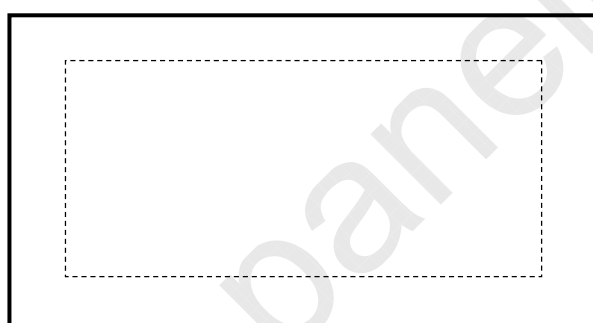
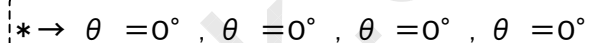
Ta=25°C

C

E

F

F



[]

L

 L_B

[V]

EDIT	DATE	DESIG.	CHECK	APPR.	DESCRIPTION					FUJITSU DISPLAY TECHNOLOGIES CORPORATION		SHEET	/
	DESIG.			CHECK				APPR.					



A



B

C

C

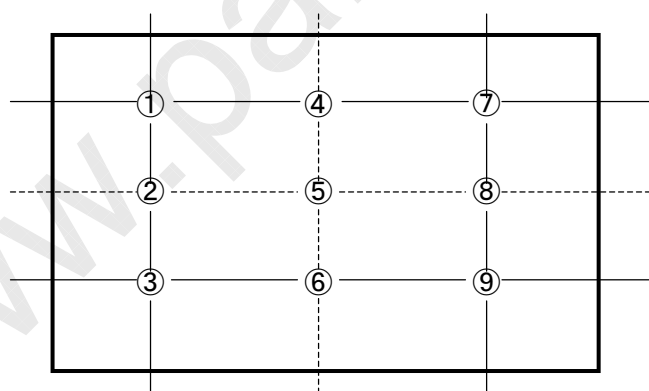
~

①~⑨

$$\Delta = \frac{\Delta}{\Delta} \times$$

D

D



①~⑨

$$\pm$$

E

DATE _____

EDIT	DATE	DESIG.	CHECK	APPR.	DESCRIPTION				FUJITSU DISPLAY TECHNOLOGIES CORPORATION		SHEET	/
	DESIG.			CHECK			APPR.					

1

A

B

C

D

E

F

	-	I	
		I	
	-	I	
		I	
	-	I	
		I	
		—	G round
	-	I	
	-		
	-		
		I	
		—	G round
	-		
		—	G round
	-	I	
	-		
		I	
	-	I	
		—	G round
		I	
		I	
		—	
		—	
		—	
		—	

DATE	DOCUMENT CONTROL SECTION

[illegible]

DATE

DOCUMENT CONTROL SECTION

A											
						-		-			
						-		-			
						-		-			
B											
						-		-			
						-		-			
						-		-			
						-		-			
C											
						-		-			
						-		-			
						-		-			
						-		-			
D											
						-		-			
						-		-			
						-		-			
						-		-			
E											
						-		-			
						-		-			
						-		-			
						-		-			
F											
						-		-			
						-		-			
						-		-			
						-		-			
.											
.											

A

B

C

D

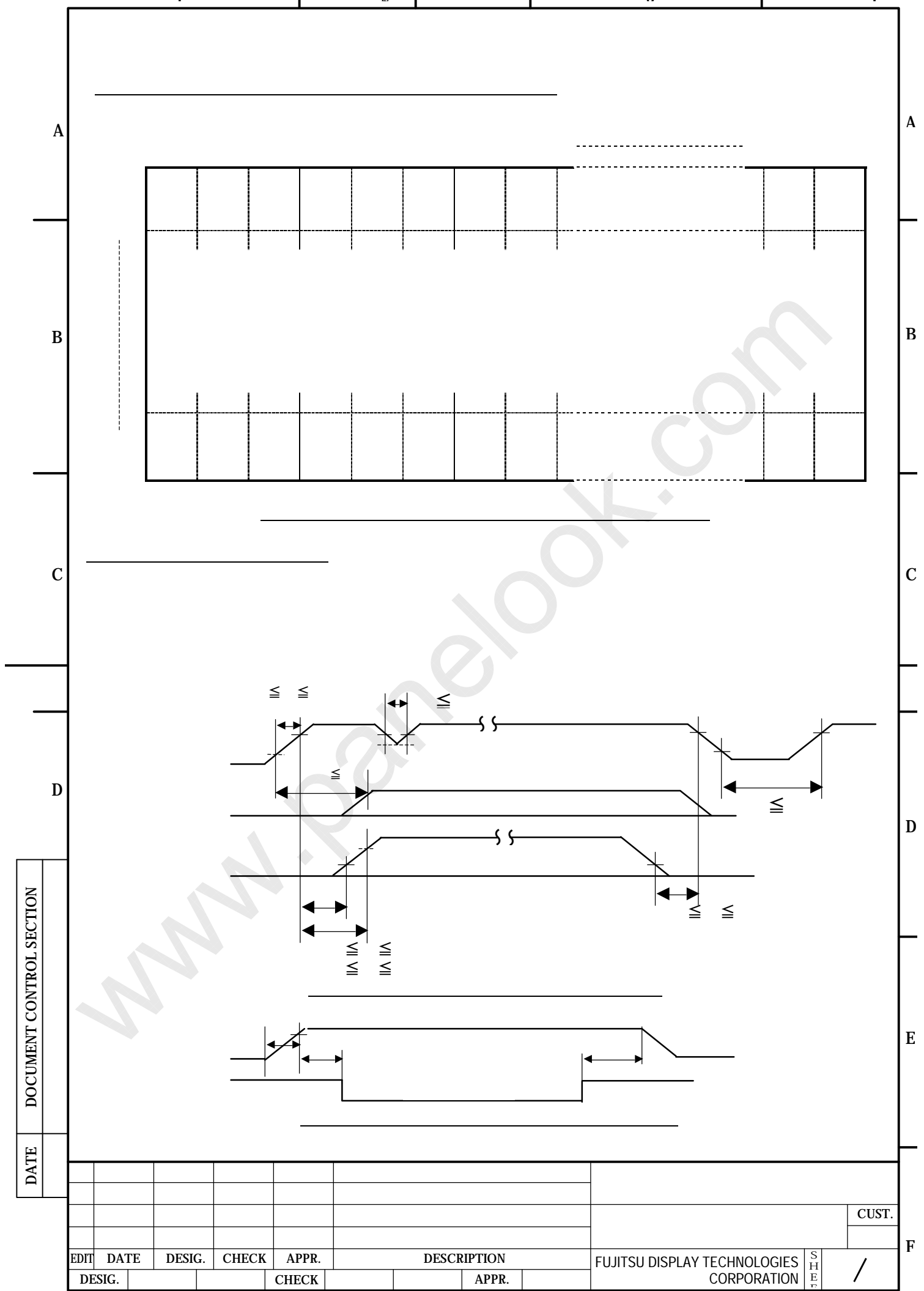
E

F

[illegible]

F





[illegible]

① : \pm °C
② :

- ①
- ②
- ③

DATE	DOCUMENT CONTROL SECTION

													CUST.		
EDIT	DATE	DESIG.	CHECK	APPR.	DESCRIPTION						FUJITSU DISPLAY TECHNOLOGIES CORPORATION		SHEET	/	
	DESIG.			CHECK				APPR.							

12. APPEARANCE SPECIFICATIONS

No.						
				≡	≡	
				≡	≡	
				≡	≡	
				≡	≡	
				≡	≡	

.
. .
. .
. .
. .

DATE	DOCUMENT CONTROL SECTION
------	--------------------------

										CUST.	
EDIT	DATE	DESIG.	CHECK	APPR.	DESCRIPTION				FUJITSU DISPLAY TECHNOLOGIES CORPORATION		S H E E T /
DESIG.				CHECK			APPR.				

A

B

C

D

E

F

													CUST.		
EDIT	DATE	DESIG.	CHECK	APPR.	DESCRIPTION						FUJITSU DISPLAY TECHNOLOGIES CORPORATION		SHEET	/	
	DESIG.			CHECK				APPR.							



[illegible]

EDIT	DATE	DESIG.	CHECK	APPR.	DESCRIPTION					FUJITSU DISPLAY TECHNOLOGIES CORPORATION		SHEET	/	
	DESIG.			CHECK				APPR.						

A

B

C

- D

DOCUMENT CONTROL SECTION

DATE _____

EDIT	DATE	DESIG.	CHECK	APPR.	DESCRIPTION				FUJITSU DISPLAY TECHNOLOGIES CORPORATION	SHEET	/
	DESIG.			CHECK			APPR.				

A

- B

- C

- D

- # E

F

DATE	DOCUMENT CONTROL SECTION										
<p>③ The following troubles occur when the LCD module is not used under recommended temperature.</p> <ul style="list-style-type: none">• 											

A

- \sim °C
- \sim

°C

B

① LCD module

(7) Others

C

① If the LCD panel is damaged, do not inhale and do not swallow the liquid crystal.

② Flux residue on the printed circuit board is harmless to the quality and reliability of LCD module.

D

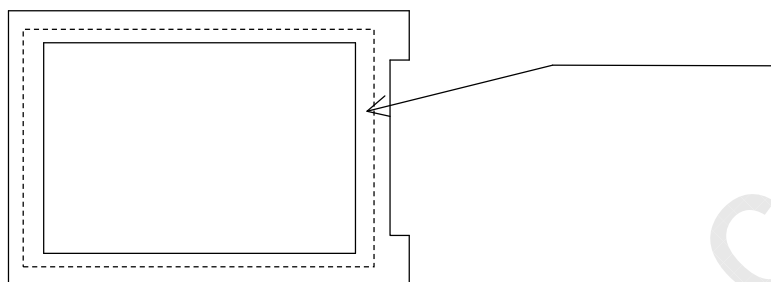
E

DATE _____

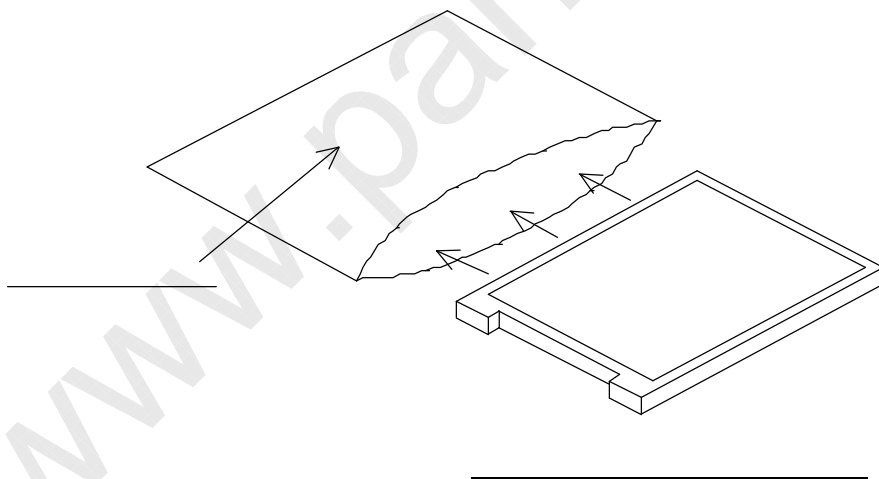
EDIT	DATE	DESIG.	CHECK	APPR.	DESCRIPTION				FUJITSU DISPLAY TECHNOLOGIES CORPORATION	SHEET	/
	DESIG.		CHECK				APPR.				

1

①Attach protective sheet.



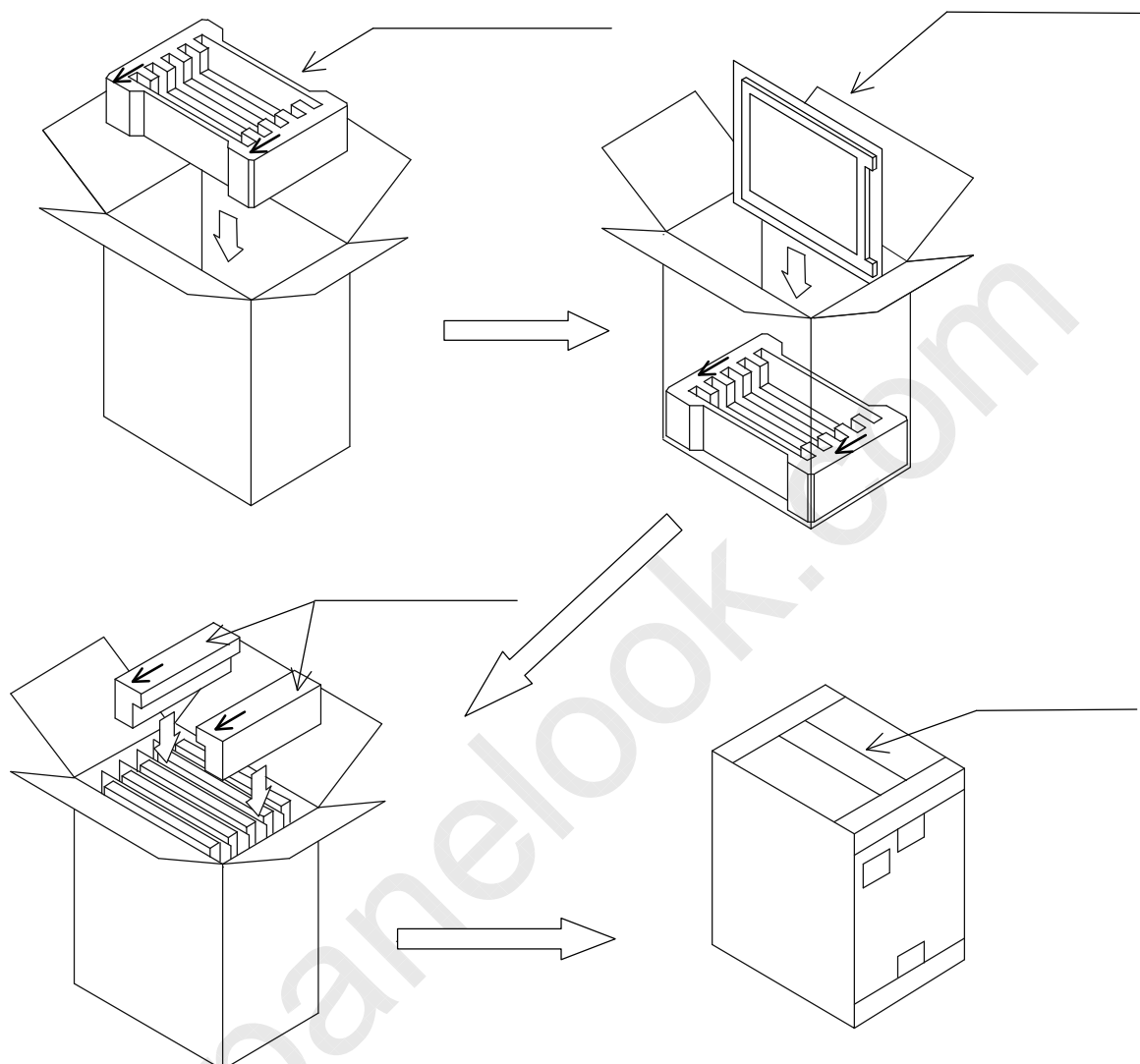
②Put the LCD unit into the anti-electric bag



DATE	DOCUMENT CONTROL SECTION

[illegible]

•



DATE	DOCUMENT CONTROL SECTION

EDIT	DATE	DESIG.	CHECK	APPR.	DESCRIPTION				FUJITSU DISPLAY TECHNOLOGIES CORPORATION	SHEET	/
	DESIG.			CHECK			APPR.				

18.OTHERS

DATE

DOCUMENT CONTROL SECTION

EDIT

DATE

DESIG.

CHECK

APPR.

DESCRIPTION

FUJITSU DISPLAY TECHNOLOGIES CORPORATION

SHEET

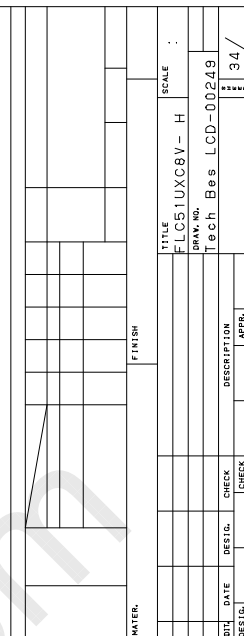
/

DESIG.

CHECK

APPR.

CUST.



○—○断面図



